TWO NEW SPECIES OF *AMBLYDERUS* (COLEOPTERA: ANTHICIDAE) FROM GREAT SAND DUNES NATIONAL MONUMENT, COLORADO[1]

Michael J. Weissmann, Boris C. Kondratieff[2]

ABSTRACT: Two new species of antlike flower beetles, *Amblyderus triplehorni*, n. sp., and *A. werneri*, n. sp. are described from Great Sand Dunes National Monument in south-central Colorado. Biological notes are included on the mating behavior and feeding by *A. triplehorni*.

The species of *Amblyderus* from North America have been treated by LeConte (1850, 1852) and Casey (1895), resulting in eight names. Werner (1975), however, recognized only four species, *A. granularis* (LeConte), *A. obesus* Casey, *A. pallens* (LeConte), and *A. parviceps* Casey.

Casey (1895) considered *Amblyderus* to be "one of the most characteristic elements of the seabeach population." While typically associated with sea beaches, some members of the genus are likely to be found in any areas where there are sand dunes in the interior of North America. Blatchley (1910) noted that *A. pallens* "occurs beneath rubbish on the sand beach and dunes of Lake Michigan, its hues so blending with those of the sand that the insects are scarcely visible until they move." *A. pallens* is known from a good number of inland dunes and sandy river bank sites, while *A. granularis* is well known from the Great Lakes beach areas, as well as a few seashore dune sites on the east coast of the United States (Chandler, personal communication).

Two new species of *Amblyderus* were collected at Great Sand Dunes National Monument, and were originally determined as undescribed by the late Floyd G. Werner. Donald S. Chandler, University of New Hampshire, will be revising the genus (personal communication), but encouraged us to describe the following two new species. In addition to these two new species, the widespread *A. pallens* (LeConte) occurs at the Monument, but was not recorded in Weissmann and Kondratieff (1999).

Great Sand Dunes National Monument consists of spectacular dunes pushed up against the Sangre de Cristo Mountains. The dune mass covers 101 km^2 on the east side of the San Luis Valley in Alamosa and Saguache Counties of south-central Colorado. These dunes tower more than 200 m above the valley floor (over 2400 m elevation). Two additional endemic Coleoptera species have been described from the Great Sand Dunes area: *Cicindela theatina* Rotger (Rotger 1944) and *Eleodes hirtipennis* Triplehorn (Triplehorn 1964).

The terminology of the descriptions follows Chandler (1997).

[1] Received September 4, 1998. Accepted January 20, 1999.

[2] Department of Bioagricultural Sciences and Pest Management, Colorado State University, Fort Collins, CO 80523.

Amblyderus triplehorni Weissmann and Kondratieff, NEW SPECIES

Figs. 1, 2

Description. Length 4.5 - 5.0 mm. **Head** triangular, wider than long; posterior-lateral angles rounded with base slightly impressed; eyes black, large, oval, and separated from base of head by a distance equal to nearly their own; integument dark brown posteriorly with lighter integument anteriorly; surface coarsly tuberculate over entire disc except for median smooth line that is broader at apex and nearly half as broad but still distinct at base; antennae nearly twice as long as head, with last antennomere conical, pubescent on distal 2/3. **Thorax** with prothorax distinctly wider than head at base, tapering evenly to base which is approx. 2/3 the width of the pronotal apex; disc of pronotum covered with tubercles, each of which is anterior to a corresponding decumbent seta arising from a puncture; anterior margin more finely tuberculate with longer, erect hairs extending toward the head both dorsally from the pronotum and ventrally from the prosternum; integument darker posteriodorsally and usually lighter anteriorly and ventrally, especially in females. **Elytra** suboval, nearly twice as long as wide, and 1/3 wider than the basal margin of the prothorax; sides slightly convex and widest in the anterior 1/3, posteriorly tapering slightly to a subtruncate to slightly sinuate apex that is medially slightly prolonged posteriorly; disc somewhat rugose, with decumbent short pubescence, with darker integument, usually lighter colored at the anterior corners and on the narrow humeri. **Legs** lighter colored than abdomen and elytra, often pale or even yellow; anterior tibiae of male only slightly sinuate on distal portion and clothed with long pubescence; tibial spurs slightly longer in the females than in the males. **Abdomen** dull with dark integument, covered with dense recumbent hairs; last 1-1/2 tergites extending beyond the apex of the elytra. Aedeagus with tegmen elongate, tapering to apex, rounded distally (Fig. 2).

Diagnosis. *Amblyderus triplehorni* can be easily distinguished from all other North American *Amblyderus* by its larger size (4.5-5.0 mm long) and tapered tegmen of the aedeagus (Fig. 2).

Discussion. Color is variable in *A. triplehorni*, but males are generally darker than females. Males usually have most of the head, pronotum, and abdomen darker, with lighter regions in the very anterior portions on each of these areas. The integument is darkest, often black, on the ventral abdomen, and lightest on the antennae, legs, ventral region of prothorax, and anterior portion of the head. Pubescence is white to silvery. Females are overall lighter in color, often with the head uniform in color and the ventral thorax light colored (dark in males). Some individuals are light tan throughout, giving the appearance of *A. pallens* but almost twice the size. Also, *A. pallens* lacks the dense erect hairs on the anterior margin of the prothorax, and the pygidium is not fully exposed dorsally.

Specimens Examined. Holotype: ♂ Colorado, Alamosa Co., Great Sand Dunes National Monument, 16-VII-1974, C.A., W.E., and B.W. Triplehorn (deposited at the USNM collection, Smithsonian). **Paratypes:** Colorado: 214 ♀♀, 135 ♂♂ same data as holotype (OSUC, UAIC, USNM, CSUC and UNHC); 9 ♀♀, 1 ♂ Great Sand Dunes, Dr. Lenczy 6 [June?] 1964 (UAIC and UNHC); 3 ♀♀, 1 ♂ Great Sand Dunes Nat'l. Monument, 25 mi. NE Alamosa, Alamosa Co., 8 June, 18 June, and 13 July 1983, T.P. Sluss (GRSA); 1 ♀ Saguache Co., Gr. Sand Dunes Nat. Mon., E. part of dune mass, 8200-8400', 6 Aug. 1990,

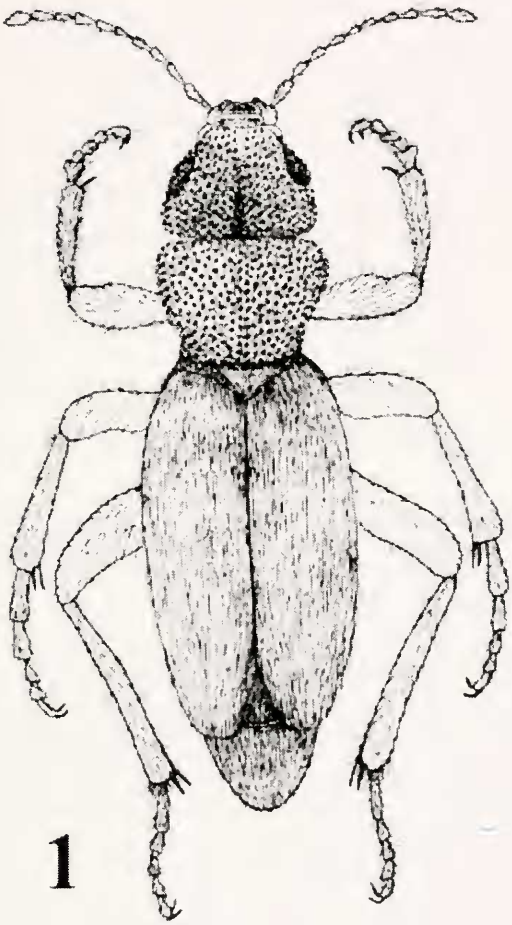
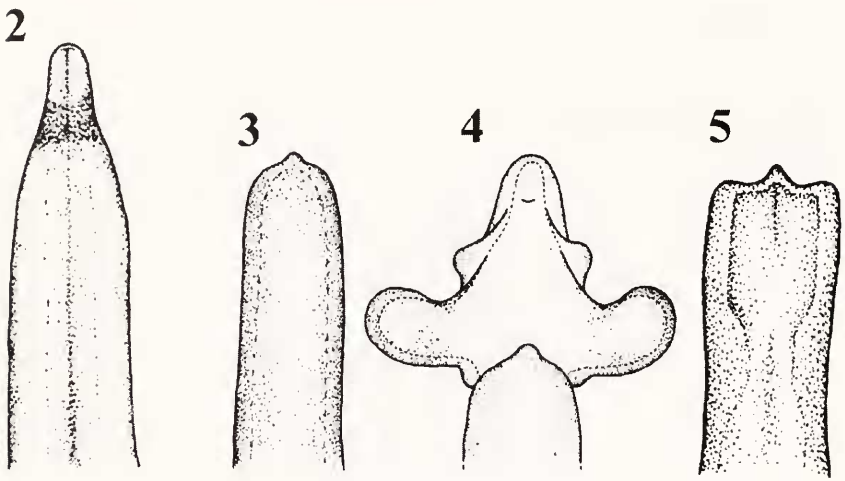


Fig. 1. Dorsal habitus of *Amblyderus triplehorni*.



Figs. 2 - 5. Dorsal view of tegmen of aedeagus. 2. *A. triplehorni*; 3. *A. werneri*; 4. *A. werneri*, extruded aedeagus; 5. *A. pallens*.

L. Clement & M. Weissmann, inside dead *Polyphylla* (CSUC); 5 ♂♂ Saguache Co., Gr. Sand Dunes Nat. Mon., 7 June 1991, L. Clement, K. Darrow & M. Weissmann, on dune mass, 8200' (CSUC); 3 ♂♂ Gt. Sand Dunes National Monument, 5 July 1958, Carol Whitney (CSUC). **Additional Records:** Colorado: 10 ♂♂ Great Sand Dunes National Monument, Alamosa Co., IX-1-1974, D.S.Chandler.

Distribution. This species is currently known only from Great Sand Dunes National Monument, Alamosa and Saguache Counties, Colorado.

Biological and Collection Information. Individuals of *A. triplehorni* were observed between 5:00 and 7:30 pm on 8 July 1997 on the eastern dunes at Great Sand Dunes National Monument, approximately 1 km uphill from Medano Creek. They were encountered in large numbers in debris pockets on the southeast side of dunes (downwind), where bits of grass and dead insects are dropped by wind. Individuals would move rapidly across the dune surface in a circuitous pattern between wind gusts, scavenging for food and occasionally stopping to feed on a small dead insect (especially aphids) trapped in debris pockets by strong winds. During a strong wind gust, they would lie flat, thereby reducing their profile exposed to the wind. As the wind would pick up surrounding debris of live and dead material and blow it around, *A. triplehorni* would tend to remain immobile until the gust passed, and then would continue moving around.

As the wind died down, they would move up to the crest of the ridge and dozens to hundreds of individuals would be visible on just a few square meters of ridge. They would move around in seemingly random patterns, stopping at every dead insect part but only feeding on some—presumably skipping over parts that were too dessicated. One individual was observed to prefer tiny yellow cicadellids that were present in large numbers. Two methods of feeding were observed: 1) head down using the middle and hind legs to anchor the body with the forelegs and palps manipulating the food; and 2) turning over on the back and manipulating the food by using all six legs to rotate the food around and move it to the mouth. Occasionally one would catch and hold food with its mouth and forelegs and walk erradically posteriorly with it.

Mating pairs were observed and duration of copulation was variable, apparently interrupted by large wind gusts or the approach of another individual.

Etymology. This species is named in honor of Charles A. Triplehorn, Ohio State University, who, with W.A. and B.W. Triplehorn, collected the large type series from Great Sand Dunes National Monument in July, 1974.

Amblyderus werneri Weissmann and Kondratieff, NEW SPECIES

Figs. 3, 4

Description. Length 3.0 mm. **Head** very broadly triangular, nearly twice as wide as long; posterior-lateral angles rounded with base distinctly impressed; eyes large, oval, and separated from posterior margin of head by a distance nearly equal to their own length; integument light yellowish brown, sometimes darker posteriorly; surface indistinctly tuberculate over entire disc except for median smooth line; antennae nearly twice as long as head. **Thorax** with prothorax only slightly wider than head at base, tapering to base which is approx. 1/2 the width of apex; prothorax cylindrical near base; disc of pronotum covered with tubercles, each of which is anterior to a corresponding decumbent seta arising from a puncture; anterior margin more finely tuberculate with white to silvery erect hairs extending toward the head dorsally and with longer hairs extending laterally and ventrally from the prosternum; integument uniformly light yellowish brown. **Elytra** suboval, nearly twice as long as wide, and 1/3 wider than the basal margin of the prothorax; sides slightly convex and widest in the anterior 1/3, posteriorly tapering slightly to a subtruncate apex; disc somewhat rugose with decumbent short pubescence with darker integument, usually lighter colored at the anterior corners, on narrow humeri, and medially. **Legs** lighter colored than abdomen and elytra, often pale or even yellow; anterior tibiae of male only very slightly sinuate on distal portion; **Abdomen** dull with dark integument, covered with dense recumbent hairs; last tergite only slightly extending beyond the end of the elytra in most individuals, although fully exposed on some females. Aedeagus with tegmen broad and scoop-shaped with a nipple-like apex (Fig. 3). The extruded portion of the aedeagus with soft tissue as in Fig. 4.

Diagnosis. *Amblyderus werneri* is similar in size to the sympatric *A. pallens*, but darker in color, and the pygidium is visible dorsally. The aedeagus is similar to that of *A. pallens* (Fig. 5), except that the tegmen in *A. pallens* is broad with three distinct distal projections.

Discussion. The few specimens available are rather similar in size and coloration.

Specimens Examined. Holotype: ♂ Colorado, Saguache Co., Gr. Sand Dunes Nat. Mon., Sand Creek, 7900', T25S R73W Sec. 31, 12 July 1991, MV light, MJ Weissmann & LC Clement (deposited at the USNM collection, Smithsonian). **Paratypes:** Colorado: 2 ♀♀ same data as holotype (CSUC); 3 ♂♂, 4 ♀♀ Great Sand Dunes National Monument, 25 mi. NE Alamosa, Alamosa Co., 18 June 1983, T.P. Sluss (GRSA); 6 ♂♂, 6 ♀♀ Saguache Co., Baca Land Grant, 29 July 1997, in pitfall trap, P.M. Pineda (CSUC); 16 ♂♂, 25 ♀♀ Alamosa Co., Medano Ranch, Interdunal Wetland, 17-20 June 1998, in pitfall trap, P.M. Pineda & C. Cordova (OSUC, UAIC, USNM, CSUC and UNHC); 14 ♂♂, 7 ♀♀ Alamosa Co., Great Sand Dunes National Monument, Main Sand Mass, 23-25 (June?) 1998, P.M. Pineda (OSUC, UAIC, USNM, CSUC and UNHC).

Distribution. This species is currently known only from Great Sand Dunes National Monument, and surrounding similar habitats in Alamosa and Saguache Counties.

Biological and Collection Information. Three specimens were collected at a mercury vapor lamp on 12 July 1991. It is not clear whether they were actually attracted to the light or whether the placement of the light (on top of a dune peak) was on top of their night "roosting" location. These specimens were collected at the dunes on the far northwest portion of the dune mass along Sand Creek (Saguache County). It is unknown where in the monument the seven T.P. Sluss specimens (18 June 1983) were collected. Ten specimens of *A. pallens* were collected by Sluss with the same label data (GRSA). Pineda also collected 21 specimens of *A. pallens* on the Baca Land Grant (29 July 1997) in the same pitfall traps with *A. werneri*.

Etymology. This species is named in memory of Floyd G. Werner, University of Arizona, a prolific worker in the Anthicidae, who first determined that this species was undescribed.

ACKNOWLEDGMENTS

We would like to thank all who loaned us specimens, including Carl A. Olson, Dept. of Entomology, University of Arizona, Tucson, AZ (UAIC); the staff at Great Sand Dunes National Monument, Mosca, CO (GRSA), and Donald S. Chandler, Department of Zoology, University of New Hampshire, Durham, NH (UNHC). Additional specimens were collected for this study by Phyllis M. Pineda, Colorado Natural Heritage Program, Fort Collins, CO and have been deposited in the C.P. Gillette Entomological Museum at Colorado State University, Fort Collins, CO (CSUC). Donald Chandler and Charles A. Triplehorn, Museum of Biological Diversity, Ohio State University, Columbus, OH (OSUC) reviewed the manuscript and provided helpful suggestions. Illustrations were prepared by Lynn Bjork and Scott J. Fitzgerald, and Richard Cowan assisted with creating the plates.

LITERATURE CITED

Blatchley, W. S. 1910. An illustrated descriptive catalogue of the Coleoptera or beetles (exclusive of the Rhynchophora) known to occur in Indiana with bibliography and descriptions of new species. Bull. #1 Indiana Depart. Geol. Nat. Res. 1386pp.

Casey, T. L. 1895. Coleopterological Notices, VI. Ann. N. Y. Acad. Sci. 8:435-838.

Chandler, D. S. 1997. Revision of the genus *Malporus* Casey (Coleoptera: Anthicidae: Anthicinae). Coleop. Bull. 51:265-275.

LeConte, J. L. 1850. General remarks upon the Coleoptera of Lake Superior. Pp. 201-242 In: Agassiz, J. L. R. Lake Superior: Its physical character, vegetation, and animals, compared with those of other and similar regions. Gould, Kendall & Lincoln, Boston. 428pp.

LeConte, J. L. 1852. Synopsis of the anthicites of the United States. Proc. Phila. Acad. Nat. Sci. 6: 91-104.

Rotger, B. 1944. A new species of *Cicindela* and two new records of Coleoptera. Pan-Pac. Entomol. 20: 76-77.

Triplehorn, C. A. 1964. A new species of *Eleodes* from Colorado (Coleoptera: Tenebrionidae). Ohio J. Sci. 64: 60-62.

Weissmann, M. J. and B. C. Kondratieff. 1999. An inventory of arthropod fauna at Great Sand Dunes National Monument, Colorado. Univ. Kans. Nat. Hist. Mus. Spec. Publ. 24:57-68.

Werner, F. G. 1975. New synonymy in the nearctic Anthicidae (Coleoptera). Proc. Entomol. Soc. Wash. 77:290.

SOCIETY MEETING OF FEBRUARY 25, 1998

Dr. Jon Gelhaus
Biodiversity group, Academy of Natural Sciences, Philadelphia

Dr. Gelhaus discussed "Bug Hunting in Mongolia," in particular his entomological research at ancient lake Hovsgol Nuur. His slides illustrated the difficulties of travel in those remote areas as well as the impressive landscapes and remarkable insects. He emphasized in his talk the intense interest of the Mongolian scientists and their students in discovering and protecting their natural heritage.

Jon also reminded the audience of the hazards of fieldwork in areas far from the beaten track with an account of his almost-tragic injury sustained while playing softball. He was lucky that he could be adequately treated with the resources at hand.

He ended by pointing out that his studies have only begun and that there is a vast wealth of undiscovered entomological knowledge waiting in central Asia for those able to undertake such challenging expeditions.

William J. Cromartie,
Corresponding Secretary